UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,230	07/12/2004	Chun Bao Zhu	1138.P005US/HCH/jcc	3556

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EXAMINER
WONG, LUT

ART UNIT	PAPER NUMBER
2129	

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/501,230	ZHU, CHUN BAO
	Examiner	Art Unit	
	Lut Wong	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>09 October 2006</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-17</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-17</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>7/12/2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   This office action is responsive to an AMENDMENT entered Oct 9, 2006 for the

patent application 10501230 filed on Jul 12, 2004.

2.   The Non-final Office Action of Jul 10, 2006 is fully incorporated into this Final

Office Action by reference.

Status of Claims

3.   Claims 1-17 are pending in this application. Claims 1-17 have been amended.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
conditions and requirements of this title.

Claims 1-17 are rejected under 35 U.S.C. 101 because the claimed invention

is directed to non-statutory subject matter for reasons of record, as set forth in

previous office action.

Response to Arguments

In re pg. 8, Applicant argues that rosters are important in many organizations and

therefore a rostering computing system/method is useful. Applicant's argument is

persuasive regarding the utility of a roaster. However, applicant is reminded that when

the claimed invention involves judicial exceptions, namely an abstract idea, there must

be a practical application that result in either

1) transforming (physical thing) or

2) having the FINAL RESULT (not the steps) produce a

useful (specific, substantial, AND credible),

concrete (substantially repeatable/ non-unpredictable), AND

tangible (real world/ non-abstract) result.

A claim that is so broad that it reads on both statutory and non-statutory subject matter must be amended. If the specification discloses a practical application but the claim is broader than the disclosure such that it does not require the practical application, then the claim must be amended. A claim that recites a computer that solely calculates a mathematical formula is not statutory.

In instant application, the last step in the claimed invention is fine-tuning a roaster. Such tuning is considered merely data manipulations by applying mathematical formula. As admitted by applicant in pg. 8 lines 2-3, where it stated "It is true that GA is search heuristic that does not guarantee a global optimum", the results, i.e. the derived roaster, are not repeatable and predictable. Hence, the claimed invention does not guarantee a repeatable and predictable roster, and thus the claimed invention is not patentable.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-17 are rejected under 35 U.S.C. 102(b) as being anticipated Boyd

et al ("Genetic algorithm for scheduling of laboratory personnel" Clin Chem.

2001; 47:118-123), as set forth in previous office action.

Claims 1 and 13: Boyd et al anticipates a rostering computing system based

upon genetic algorithms, said rostering computing system comprising:

at least one computer readable storage medium (a software runs in PC must

have computer readable storage medium. See p2 ¶2) within which embedded a

computer program code for performing rostering; wherein the computer program code

comprises:

a workload and shift setting optimizer for constructing an initial shift list matrix

(*EN: workload and shift setting optimizer is merely a module or a function of the*

software. It is non functionally distinct from the "GeneHunter" module which enumerate

chromosomes. See p.2 ¶3 where it states "An enumerated chromosome is made up of individual

numbered genes. Each chromosome must have only one of each of these numbered genes, and the ordering of the

genes on the chromosome can be completely random"), wherein the shift list matrix has m rows and n

columns, wherein m and n are integral numbers, and when m represents a plurality of

staff, n represents a plurality of shifts during a rostering period (*EN: shift list matrix is*

merely a matrix of shift list. Each shift list represents assignment of a staff. It is non

functionally distinct from the population of chromosomes where each chromosome

represents assignment to stations. See fig 2); and

a rostering engine for performing genetic algorithm evolution on said initial shift

list matrix to first derive a roster (*EN: rostering engine is merely a software. The initial*

shift list matrix is merely a population of possible schedules. See fig 3 of Boyd et al

where the first step is to initialize the populations of possible schedules) and then further

fine-tune said roster (*EN: fine-tune merely means certain fitness function has been*

reached. See fig 3 of Boyd et al where the GA process ended when "terminate"

decision is met), said genetic algorithm evolution being based upon dynamic adjusting

factors, each of said dynamic adjusting factors being respectively associated with each

of said shift lists (*EN: dynamic adjusting factors merely means genetic operations*

parameters. See fig 1 of Boyd et al where mutation is done on a chromosome).

Claim 2: Note that shifting factor merely determines how many times a

chromosome is shifted. It is non-functionally distinct from mutation operation. A shifting

factor of 1 is achieved by mutating each gene pairs once. For example, shifting "1 2 3"

by 1 result in "2 3 1". It can be achieve by applying mutation on g1 and g2, which

results in "2 1 3". Then apply another mutation on g2 and g3, which ends up with "2 3

1". Hence, the results are the same.

Claims 3 and 14: Note that the roaster is derived by shifting said lists in at least

one evolutionary cycle based upon said shifting factors. See fig 3 of Boyd et al where

step 2 in the GA process is creating offspring schedules by mutation and mating. As

mentioned in claim 2, shifting a list is non functionally distinct than apply mutations.

Claim 4: Note that swap factor is the same as mutation factor.

Claim 5: Note that swapping factor of a gene group merely means the position of

n-point crossover. For example, swapping "1 2 3 4" and "5 6 7 8" at swapping position 3

results in "1 2 7 4" and "5 6 3 8". It is non functionally distinct from the 2 point crossover

operation at position 2 and 3. The first crossover at position 2 results in "1 2 7 8" and "5

6 3 4". Then the next crossover at position 3 results in "1 2 7 4" and "5 6 3 8". Hence

swapping between gene groups is achieved by doing n-point crossover. See fig 2 of

Boyd et al regarding crossover and fig 3 regarding fine turning.

Claim 6: Note that genetic operations are repeated until optimal or sub-optimal

solution is obtained. See fig. 3 where the GA process ends when "termination" criteria

is met. See also p.2 where it states "the process is repeated until no additional improvements occur in

the fitness function of the best identified chromosome after 100 generations".

Claim 7: Note that each chromosome represent who is assigned to what

stations. The working shift is represented by the chromosome, i.e. who gets to work on

a particular day. The non-working shift is inferred by those value not in the

chromosome, i.e. those number not in the chromosome does not have to work on that

day.

Claims 8, 16-17: Boyd et al anticipates a rostering method that construct an

initial shift list matrix, derive a roster from the shift matrix and fine-tune the roaster using

dynamic adjusting factors. See fig 3 of Boyd et al where initialization of shift list matrix

is done in step 1. Note that the initialized population is also a derived roaster. Steps 2-

4 is the fine tuning process. Note also that dynamic adjusting factor is merely genetic

operation.

Claim 9: Note that dynamic shifting is merely the same as mutation as

mentioned in claim 2. See fig 3 regarding at least one evolution cycle, where mutation

is performed at step 2 of fig 3 and the process is repeated until a terminate condition is

met.

Claims 10 and 15: Note that calculating of fitness is done in step 3 of fig 3. See also section "Materials and Methods" of Boyd et al where it states "The fitness function measure the fitness of an overall assignment of individuals to job stations (as represented by one chromosome) by calculating...."

Claim 11: See fig 3 step 4 where best schedules are selected.

Claim 12: swapping between a gene group is merely the same as n-point crossover conventional in the art as mentioned in claim 5. See also fig 2 and fig 3.

Response to Arguments

In re pg. 8-13 regarding 102 rejections, applicant's arguments have been fully considered but they are not persuasive.

In re pg. 8, applicant argues that Boyd discloses a direct gene modeling method that is traditional and static.

In response to applicant's argument, while it is true that Boyd uses direct modeling, Boyd's method and system still reads on the claims because the claims fail to specify indirect modeling.

In re pg. 9-10, applicant argues that Boyd method and system cannot handle lengthy chromosomes size and handle large complex problem.

In response to applicant's argument, while it is true that Boyd's method and system has such limitations, Boyd's method and system still reads on the claims because the claims fail to specify handling large complex problem.

In re pg. 11, applicant argues that the applicant's invention uses indirect and dynamic gene modeling.

In response to applicant's argument, there is no mention of these limitations in the claims and the specification is not the measure of the invention. Therefore, limitations contained therein can not be read into the claims for the purpose of avoiding the prior art; see In re Sprock, 55 CCPA 743, 386 F.2d 924, 155 USPQ 687 (1968).
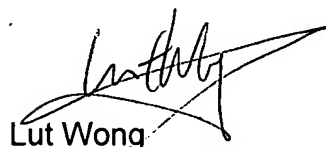
Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
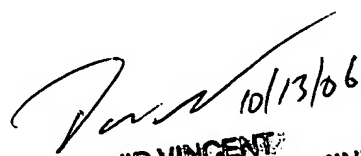
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lut Wong whose telephone number is (571) 270-1123. The examiner can normally be reached on M-F 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Vincent David can be reached on (571) 272-3080. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lut Wong
Patent Examiner

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SUPERVISORY PATENT EXAMINER